



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/574,047

02/27/2007

Laurent Geron

505406

8039

53609

7590

08/13/2008

REINHART BOERNER VAN DEUREN P.C.  
2215 PERRYGREEN WAY  
ROCKFORD, IL 61107

EXAMINER

MCKANE, ELIZABETH L

ART UNIT

PAPER NUMBER

1797

NOTIFICATION DATE

DELIVERY MODE

08/13/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

RockMail@reinhartlaw.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/574,047	<b>Applicant(s)</b> GERON ET AL.	
	<b>Examiner</b> ELIZABETH L. MCKANE	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/29/06</u>   | 6) <input type="checkbox"/> Other: _____                          |

***Election/Restrictions***

1. Applicant's election with traverse of Group I in the reply filed on 6 June 2008 is acknowledged. The traversal is on the ground(s) that claim 15 is directly linked to claim 1. This is found to be persuasive. Therefore, the requirement is withdrawn.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 6, 7, and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, lines 6 and 11 “the wall” lacks positive antecedent basis as a “wall panel” has only previously been recited in the context of being a “preferable” form and thus, is not a required limitation on the claim. In line 13, recitation of “at least one grate” is confusing as it cannot be determined if the “grate” is the same structural element as the “filter” recited in line 8.

In claim 6, the use of the exemplary claim language “i.e.,” although not necessarily rendering the claim indefinite, would be more clear without the exemplary claim language. In fact, as written the claim would not require the equation following the exemplary claim language. Moreover, it is unclear what the equation is intended to determine.

In claim 7, the term " $S_{\text{steel}}$ " is used to represent both the ratio between the physical surface and the total surface and it is used to represent the physical surface. This renders the claim vague and indefinite.

Claim 12 is vague and indefinite as it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

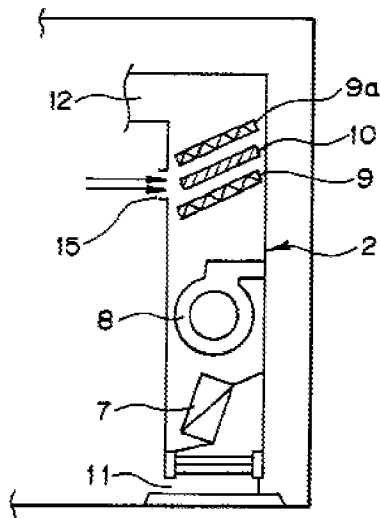
6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

Art Unit: 1797

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirayama (US 6,048,499) in view of Yates et al. (US 2004/0136863) and Jones (US 5,925,320).

With respect to claims 1, 9, 12, and 14, Hirayama teaches a device for the



continuous purification of the air of an inhabited room. See col.1, lines 9-28. The device of Hirayama is in the form of a wall panel **2** having an external structure, an opening **11** located at the bottom of the front part of the panel for the intake of air to be treated, an source of radiation **15**, a filter **10** comprising a support covered with photocatalytic  $\text{TiO}_2$  (col.2, lines 53-57), an opening **12** located at the top of the front part of the panel for releasing purified

air, and a fan **8** for circulating air through the device.

Hirayama is silent with respect to the external structure being metal, to an internal frame for attaching a series of UVA lamps, and that the filter **10** is made of expanded metal covered with anatase  $\text{TiO}_2$ .

Yates et al. discloses a photocatalytic air filtration system wherein the filters **210** themselves are expanded mesh sheets covered with anatase  $\text{TiO}_2$ . See paragraphs

Art Unit: 1797

[0032], [0036]-[0039]. Furthermore, the filters are irradiated with 3-4 UV lamps **250** irradiating in the UVA wavelengths. See paragraph [0033]. The lamps **250** are supported by an internal frame **822** and the system may be used in stand-alone units having fans to circulate the air (paragraph [0057]).

Jones teaches that it was known in the art at the time of the invention to fabricate the external and internal structures of an air purifier of metal, such as stainless steel. See col.3, lines 57-62; col.5, lines 35-40.

It would have been obvious to one of ordinary skill in the art to replace the filter **10** and radiation source **15** of Hirayama with the filters **210** and UV lamps **250** of Yates et al. as the filtering system **150** of Yates et al. is suitable for use in a stand-alone system like that of Hirayama and since it is successful in removing airborne contaminants such as bacteria, VOCs, odors, etc.. See paragraph [0029]. The results of making such a substitution would have been readily apparent and expected. Furthermore, it would have been obvious to fabricate the internal and external structures of the combination of Hirayama with Yates et al. of a metal, such as stainless steel, since Jones teaches that the use of reflective inner surfaces "minimizes absorption of the electromagnetic energy, thereby increasing the efficiency of the system to purify the ambient air. A highly polished stainless steel surface is preferred." See col.3, lines 57-62. Yates et al. further teaches that "[t]he housing, air duct, and partition members can be made of stainless steel to prevent deterioration caused by oxidation" (col.5, lines 35-40).

With respect to claims 2 and 3, the combination of Hirayama with Yates et al. discloses the use of highly polished stainless steel. This material is chosen for its high reflectivity of UV wavelengths. It would have been obvious to one of ordinary skill in the art to choose a stainless steel with the desired reflective properties such as bright-annealed stainless steel, where the results are not unexpected.

As to claims 4 and 5, limitations relating to the size of the external structure and intake/outlet openings are not a matter of invention as they relate at most to the size of the device. In re Yount, 36 CCPA (Patents) 775, 171 F. 2d 317, 80 USPQ 141.

With respect to claims 6 and 7, the expanded metal screens of Yates et al. would have intrinsically met the claimed equations.

As to claim 8, the expanded metal sheets of Yates et al. are disclosed to be supported around the perimeter thereof. See paragraph [0036]. Moreover, Hirayama discloses alternate embodiments in Figures 5A-D wherein the filter is in a vertical arrangement.

With respect to claim 10, the fan of Hirayama is a tangential type fan. Although Hirayama shows the fan located along the middle of the wall panel, it is not deemed obvious to move the location of the fan as such is readily within the skill of one in the art and the results would have been expected. Moreover, Yates et al. discloses that when using the photocatalytic filtering system, an air flow rate of 1000-4000 cfm (1699-6796 m<sup>3</sup>/hour) should be maintained. See paragraph [0048]. This converts to 56-226 people within the inhabitable room at 30 m<sup>3</sup>/hour/person.

As to claim 11, Yates et al. teaches that the UV lamps can be placed between layers of expanded metal.

With respect to claim 13, Hirayama evidences the use of the air purifier within a wall of a habitable room. Although not specified by Hirayama, it is not deemed obvious to alter the exterior surface of the purifier for aesthetic purposes.

As to claim 15, Yates et al. discloses that one may choose and optimize the size of the screen (paragraph [0036]), the number of screens and UV lamps used (paragraph [0057], Table 1), determination of the light intensity at the furthestmost screen ([0049]), determination of air flow rate through the screens (paragraph [0048] and Table 1), and calculation of the change in pollutant concentration (Table 1). Given that all of these variables are recognized by Yates et al. to be critical, it is deemed obvious to one of ordinary skill in the art to employ all relevant variables, including temperature, in optimizing the air purification system of Hirayama with Yates et al. and Jones.

### ***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELIZABETH L. MCKANE whose telephone number is (571)272-1275. The examiner can normally be reached on Mon-Fri; 5:30 a.m. - 2:00 p.m..



If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gladys Corcoran can be reached on 571-272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Elizabeth L McKane/  
Primary Examiner, Art Unit 1797

elm  
7 August 2008